

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claims 1-36 (Cancelled)

Claim 37 (Currently Amended): A process, ~~for the manufacture of polymer coated composite substrate, said process~~ comprising:

~~providing a compressible mat, wherein the compressible mat comprises at least one of wood chips, flakes, fibers and particles in a resin binder composition;~~

applying on a surface of a the compressible mat a formaldehyde-free, chemically crosslinkable primer coating composition that is not carried on a paper carrier sheet, wherein the compressible mat comprises at least one of wood chips, flakes, fibers and particles in a resin binder composition, and wherein the crosslinkable primer coating composition comprises comprising:

95 to 99 % by weight, based on weight of dry materials in the composition, of an anionically stabilized aqueous emulsion of a copolymer with a T_g of -10 °C to 50 °C, the polymer comprising in polymerized form a polymerization mixture containing two or more ethylenically unsaturated monomers; 0.2 to 5% by weight of a polyimine compound having a number average molecular weight from 250 to 20,000; and 0.2 to 5% by weight of a volatile base;

wherein the chemically crosslinkable composition forms a chemically crosslinked polymer matrix when, or as, the composition is being applied to the compressible mat;

applying on the crosslinked polymer matrix a top coat composition comprising a thermoplastic or a thermosetting polymer latex composition to form a top coat layer; and

compressing and heating the crosslinked polymer matrix, the top coat layer, and the compressible mat to form ~~the polymer coated composite substrate, wherein the polymer coated composite substrate~~ is a wood composite construction material selected from one of hardboard, medium density fiberboard, oriented strand board, particle board, or plywood.

Claims 38-50 (Cancelled).

Claim 51 (Previously presented): The process of claim 37, wherein the chemically crosslinkable composition has a solids content from about 30% to about 80% by weight.

Claim 52 (Previously presented): The process of claim 37, wherein the chemically crosslinkable composition has a solids content from about 20% to about 70% by weight.

Claims 53-66 (Cancelled).

Claim 67 (Previously Presented): The process of claim 37, wherein the primer coating composition has a pH of about 8 to about 11.

Claim 68 (Previously Presented): The process of claim 37, wherein up to up to 5 wt% of the monomers in the polymerization mixture are α - β -ethylenically unsaturated aliphatic carboxylic acid monomers.

Claim 69 (Previously Presented): The process of claim 37, wherein the monomers comprise (meth)acrylate monomers.

Claim 70 (Previously Presented): The process of claim 37, wherein the volatile base comprises ammonium hydroxide.

Claim 71 (Currently Amended): A process for the manufacture of polymer coated composite substrate, said process comprising:

~~providing a compressible mat, wherein the compressible mat comprises at least one of wood chips, flakes, fibers and particles in a resin binder composition;~~

applying on a surface of a the compressible mat a formaldehyde-free, chemically crosslinkable primer coating composition that is not carried on a paper carrier sheet, wherein the compressible mat comprises at least one of wood chips, flakes, fibers and particles in a resin binder composition, and wherein the primer coating composition comprises comprising:

95 to 99 % by weight, based on weight of dry materials in the composition, of an anionically stabilized aqueous emulsion of a copolymer with a T_g of -10 °C to 50 °C, the polymer comprising in polymerized form a polymerization mixture containing two or more ethylenically unsaturated monomers; 0.2 to 5% by weight of a polyimine compound having a number average molecular weight from 250 to 20,000; and 0.2 to 5% by weight of a volatile base;

wherein the chemically crosslinkable composition forms a chemically crosslinked polymer matrix when, or as, the composition is being applied to the compressible mat;

applying on the crosslinked polymer matrix a top coat composition comprising a thermoplastic or a thermosetting polymer latex composition to form a top coat layer;

applying a release coat composition on the top coat composition; and

compressing and heating the crosslinked polymer matrix, the top coat layer, and the compressible mat to form ~~the polymer coated composite substrate, wherein the polymer coated composite substrate is a wood composite construction material selected from one of hardboard, medium density fiberboard, oriented strand board, particle board, or plywood.~~

Claim 72 (Currently Amended) The process of claim 37, wherein the wood composite construction material is a finished door skin or an exterior hardboard siding product.

Claim 73 (Currently Amended) The process of claim 71, wherein the wood composite construction material is a finished door skin or an exterior hardboard siding product.

Claim 74 (Currently Amended) A process ~~for the manufacture of polymer coated wood composite construction materials, said process~~ consisting of the following steps, in order:

applying on a surface of a compressible mat a formaldehyde-free, chemically crosslinkable primer coating composition that is not carried on a paper carrier sheet, wherein the compressible mat comprises at least one of wood chips, wood flakes, wood fibers and wood particles in a resin binder composition, and wherein the primer coating composition comprises a polymer latex that forms a chemically crosslinked polymer matrix when, or as, the primer coating composition is being applied to the compressible mat;

applying on the crosslinked polymer matrix a top coat composition comprising a polymer latex composition to form a top coat layer; and

compressing and heating the crosslinked polymer matrix, the top coat layer, and the compressible mat to form a the wood composite construction material, ~~wherein the wood composite construction material~~ is selected from one of hardboard, medium density fiberboard, oriented strand board, particle board, or plywood.

Claim 75 (Previously Presented) The process of claim 74, wherein the wood composite construction material is a finished door or a finished exterior hardboard siding product.

Claim 76 (Currently Amended) A process ~~for the manufacture of polymer-coated wood composite construction materials, said process~~ consisting of the following steps, in order:

placing in a mold a compressible mat, wherein the compressible mat comprises at least one of wood chips, wood flakes, wood fibers and wood particles in a resin binder composition, and wherein the mold is sized to form a door or an exterior hardboard siding product;

applying on a surface of the compressible mat a formaldehyde-free, chemically crosslinkable primer coating composition that is not carried on a paper carrier sheet, wherein the primer coating composition comprises a polymer latex that forms a chemically crosslinked polymer matrix when, or as, the primer composition is being applied to the compressible mat;

applying on the crosslinked polymer matrix a top coat composition comprising a polymer latex composition to form a top coat layer; and

compressing and heating the crosslinked polymer matrix, the top coat layer, and the compressible mat in the mold to form a finished door or a finished exterior hardboard siding product.